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I. *A Description of an extraordinary Rainbow observed July 15, 1748. by Peter Daval, Esq; Sec. R. S.*

Read Oct. 26, 1749. **U**PPON Monday the 18th of July 1748. about a Quarter before Seven in the Evening, the Weather being temperate, and the Wind about N. N. W. as I was walking in the Fields, beyond *Islington*, I saw a distant Rainbow which appeared to take in a large Portion of the Heavens; but had nothing remarkable, and vanish'd by degrees.

Continuing my Walk, about twenty Minutes after the Disappearing of the first Rainbow, a rainy Cloud cross'd me, moving gently with the Wind, which exhibited to me a more perfect and distinct Rainbow, than I had ever before seen; wherein I could plainly distinguish all the secondary Orders of Colours taken Notice of by the late Dr. *Langwith* in his Letters to Dr. *Jurin* published in the Philosophical Transactions*, that is, to say, within the Purple of the common Rainbow, there were Arches of the following Colours.

1. Yellowish Green, darker Green, Purple.
2. Green, Purple.
3. Green Purple.

**Vid. Phil. Transf. No. 375. from Page 241 to 245. Ab. Transf. (Eames and Martin) Vol. 6. p. 122, 123.*

This innermost arch Dr. *Langwith* calls faint vanishing Purple, and I likewise found, that it sometimes appear'd and disappear'd alternately; but during about two Minutes it seem'd to me to be as permanent as any of the other Colours.

I stood still, and look'd attentively at this Appearance, during the whole Time of its Continuance, which was near eight Minutes, and could for the greatest Part of that Time discern all the above-mention'd Colours, except the innermost Purple in the upper Parts of the Bow; but could not distinguish any of them in those Parts of it which were near the Horizon, tho' they were extremely vivid, as was likewise the outer Bow, in which the Colours appear'd as bright, tho' not so well defin'd, as in most inner Rainbows I had seen.

As I had read Dr. *Langwith's* Letter a short time before I saw this beautiful Appearance, and as I compared his Account with what I had seen, the same Evening, and again the next Morning, I can the better be aslur'd of the exact Agreement of our Observations.

On my first seeing this Phænomenon, I was surpris'd, that the Diameter of the Bow appear'd to me very small, compar'd with that I had seen a little before. The Occasion of this I think must have been, that the Legs of the first-mention'd Bow appeared to me to terminate at distant Places: Whereas in the latter Appearance I could plainly see both Ends of the inner and outer Bows terminated in the neighbouring Fields, at a very small Distance from each other: Hence, and from my being involv'd in the Shower which occasion'd this Rainbow, I conclude it

it was very near me; which might be one Cause of the great Vividness of its Colours, and of my distinguishing the inner Arches. But whether this was the only Cause of those Appearances, or whether they might not be owing to some particular Disposition of the Atmosphere at that Time, I much question: As well because I have often seen Rainbows which have been very near me, and opposed to a bright Sun, wherein I could not discern these inner Orders of Colours, as that I have heard from some intelligent Persons, that some very bright Rainbows were seen soon after the Solar Eclipse which happened on the 14th of *July* 1748. particularly that an unusually vivid and distinct Rainbow was observ'd at *Twick-enham* three or four Days after that Eclipse, which agrees with the Day on which I saw the above-mention'd Appearance.
